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KASC
INFORMATION SERVICES

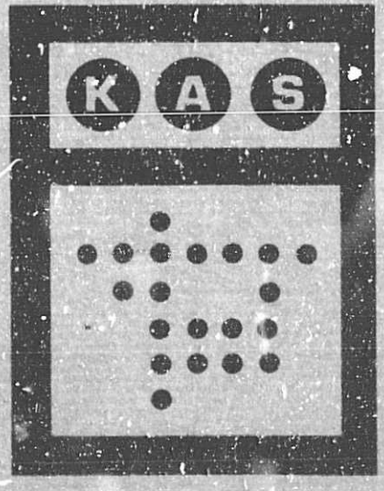
THIRD QUARTER REPORT

September . October . November

THE SPACE AND TECHNOLOGY TRANSFER PROGRAM

at the
University of Pittsburgh
Knowledge Availability Systems Center

NSR-39-011-106



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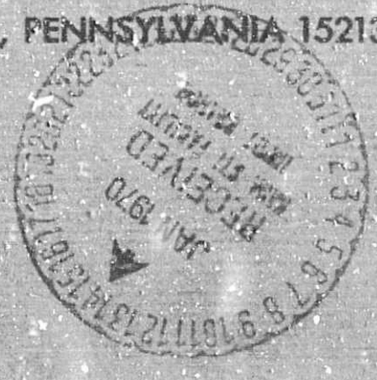


THIRD QUARTER REPORT

September . October . November

THE SPACE AND TECHNOLOGY TRANSFER PROGRAM

at the
University of Pittsburgh
Knowledge Availability Systems Center

Submitted to:

The National Aeronautics and Space Administration

(Contract No. NSR 39-011-106)

Approved by:

Edmond Howie
Assistant Director

Submitted by:

Allen Kent
Director

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF EXHIBITS

I. INTRODUCTION

This quarterly report is submitted in fulfillment of the requirements of the National Aeronautics and Space Administration Contract No. NSR 39-011-106 and covers the time period September 1, 1969, through November 30, 1969.

The three months span of time constitutes the third quarter of the sixth year of operation of the University of Pittsburgh Knowledge Availability Systems Center as a Regional Dissemination Center (RDC) for the National Aeronautics and Space Administration. The purpose of this report is to relate the activities of the RDC during the three months and to describe the impact of these activities in the transfer of aerospace technology to the non-aerospace sector of the Nation's industry.

The report describes:

1. Marketing of the RDC services--a summary of marketing activities, the net industrial income, plans and objectives, tools of marketing, and the resulting clientele.

2. Technical Operations of the RDC--the services provided and the quantitative units of service.

3. Analysis Operations--strategy preparation for computer searches, manual searches, review of search output, impact studies, and aids to marketing.

II. MARKETING OPERATIONS

John E. Matenkosky
T. Scott Beveridge

- Summary of Marketing Activities
- Net Industrial Income
- Plans and Objectives
- Tools of Marketing

  Direct Mail
  - Control
  - Mailing Pieces
  - Mailing List

  Presentations to Potential Clients
  Periodic Clientele Contacts
  Letters of Intent
  Electronics Design News (EDN) Caravan

- KASC Clientele Totals
- KASC Clientele Compositions

SUMMARY OF MARKETING ACTIVITIES

	Current Quarter	Last Quarter	Year To Date
Total Industrial Income	$16,726.84	$18,344.00	$55,203.24
Net Annual Contracts	57	60	-
Number of Clients Served	70	72	-
Number of Profiles Searched	361	425	1,252
Number of Searches Performed	1,014	1,196	3,489
Number of Calls on Clients	110	69	254
Number of Calls on Prospects	107	31	171
Total Direct Mail Pieces	2,660	1,573	5,260
Positive Response Percentage	0.70%	1.00%	1.06%

NET INDUSTRIAL INCOME

Total industrial income for the KASC RDC activity during the reporting period was $16,726.84. The distribution of this income among the types of services offered by the KASC is as follows:

• Search Services		
	Annual Basis	$14,015.62
	Ad Hoc Basis	$ 545.00
• Document Services		$ 1,080.22
• Abstract Packet Service		$ 1,086.00
	TOTAL	$16,726.84

Income derived from search services provided an annual basis is allotted equally to each month included within the year of service contracted regardless of when the funds may have been paid. Income from ad hoc search services, i.e., retrospective searches only, and the other services of the KASC is considered as income for the month in which the service was provided. On a monthly basis, then, the total industrial income was as follows:

• September		$ 5,537.13
• October		$ 5,438.65
• November		$ 5,751.06
	TOTAL	$16,726.84

PLANS AND OBJECTIVES

Because direct mail must continue to be the major source of prospective clients, a great deal of emphasis has been placed on the planning and development of an effective program, the details of which are included in the Tools of Marketing section. Several methods of increasing response have been tried, and the analysis of the results has helped to guide these latest efforts.

The efforts put forth on the Marketing records system have already resulted in the immediate availability of statistics necessary for management information and for the generation of reports. Further development of the system is planned.

Also in the planning stage is a Marketing effort for NASA/SCAN. Of prime importance is the need to deliver a SCAN sheet to the desk of a user at a very low cost. Our preliminary estimates indicate that this can be accomplished if the production and records systems are kept to a minimum.

A presentation to the engineering faculty at the University of Pittsburgh is being planned for January 1970. They will be encouraged to make use of the RDC capabilities in their research, teaching, and consulting activities.

TOOLS OF MARKETING

During the three-month period covered by this report, the marketing tools utilized by the KASC included:

- Direct Mail
- Presentations to Potential Clients
- Periodic Clientele Contacts
- Letters of Intent
- Electronics Design News (EDN) Caravan

Direct Mail

Progress was made during this period toward the development of an effective direct mail program. Mailings were increased 59% over the previous quarter and we have identified letters and mailing combinations that are producing above average response. Preparations have been made to incorporate our findings into an improved direct mail campaign to be launched January 12, 1970.

For purposes of this report we will discuss three elements of the direct mail program: 1) control; 2) mailing pieces; and 3) mailing list.

Control

Two mailing cycles were in effect during the quarter. They were identified as Cycles Alpha (A) and Charlie (C). Cycle A was also in effect in the previous quarter (although not identified as such) and consisted of three mailing pieces. Cycle C, initiated September 15th continues into the next quarter.

A mailing timetable was developed to coordinate output quantity with the mailing list and mailing pieces. In effect, each addressee received three letters; initial letter, 1st follow-up and 2nd follow-up on a scheduled basis.

Responses were logged against the mailing piece and date of the mailing. Cycle A drew .48% positive response, Cycle C response totaled .90%.

Mailing Pieces

Eight mailing pieces were used during the quarter. Three of these, used in Cycle A, have been exhibited and discussed in previous reports. Five new pieces were prepared and added during this report period.

Table 2-1 shows the response to the five new mailing pieces. These pieces are described below:

Cycle A

- 'Secretary Memo' Exhibit A - This attachment was added to 151 mailings in the cycle. Responses were received from 2% of the addressees as compared to .48% overall response to the cycle. Services were sold to one of these respondents.

Cycle B

- Initial Letter Exhibit B
- First Follow-up Exhibit C

These two letters describe KASC and the services provided. Responses to the initial letter were received from 1.80% of the addressees. Business reply cards were enclosed with the initial letter and six of the responses were on these cards.

- Second Follow-up Exhibit D - This letter is designed to convey a brisk businesslike tone. Six responses were received from 388 letters. Even though four of these were negative responses, the letter produces action and a modified version will be introduced next quarter.

- Business Reply Piece Exhibit E - The enclosure to the initial letter was returned by 1% of the addressees to whom the letter was sent.

Table 2-1. Response to Mailings

Mailing Cycle	Mailing Pieces	Number of Mailing	Pos. Resp.	%	Neg. Resp.	%
Cycle A	Initial	453	3	0.66	0	0.00
	First Follow-up	360	2	0.55	1	0.28
	Second Follow-up	574	1	0.17	0	0.00
	"Secretary" Memo*	151	3	2.00	0	0.00
Cycle C	Initial *	609	11	1.80	1	.0016
	First Follow-up *	436	0	0.00	0	0.00
	Second Follow-up*	388	2	0.51	4	.0103
	Business Reply *	609	6	0.99	-	-

*New pieces introduced this quarter

Mailing List

The list used for Cycle A mailings was a Dun & Bradstreet list which directed mail to top corporate officers. Table 2-2 provides data on Cycle C. Four different mailing list sources are shown.

Table 2-2. Cycle C Addressees

Cycle	Date	Output Planned	Actual Output	Source Addresses	Geographical Area	Market
C-1	9-15	100	92	D&B	Pennsylvania	Chemical
C-2	9-22	100	101	D&B	Pennsylvania	Chemical
C-3	9-29	100	100	ME	General	Chemical
C-4	10-06	100	66	ME	General	Chemical
C-5	10-20	50	50	ME	General	Chemical
C-6	10-27	50	50	Current Customers	General	General
C-7	11-10	50	50	Current Customers	General	General
C-8	11-17	50	50	Past Customers	General	General
C-9	11-24	50	50	Past Customers	General	General

Presentations to Potential Clients

During the reporting period, 107 prospective contacts were made by the Marketing Department, compared to 31 made during the last quarter. This increase in prospecting activity is due primarily to the addition of a second Marketing Representative at the beginning of the period.

Contacts on prospects included the following:

- Telephone Contacts 96
- Visits 11
- Correspondence 49

TOTAL 156

Periodic Clientele Contacts

Periodic contact with KASC clients is made by both the Marketing and the Analysis groups. The contacts initiated by Marketing are primarily for contract renewal purposes. Calls are also made concerning new or changed questions, problems with existing questions, and the extension of services within a company.

Marketing contacts with current clients made during this quarter were as follows:

• Telephone Contacts	39
• Visits	21
• Correspondence	35
TOTAL	145

Letters of Intent

Marketing uses a standard form which indicates the desire of a prospect to enter the program. This commitment, although not legally binding, is considered to be sufficient to permit the expenditure of time for further negotiations with the prospect.

A variation of this form is sent to clients with a cover letter as the first step in the renewal of an existing contract. Because the approval of purchase orders and contracts takes time, the completion of our form allows service to be continued past the normal expiration date of the contract.

Electronics Design News (EDN) Caravan

The EDN Caravan, two semi-trailers containing displays of the goods and services of various manufacturers, visited industries in areas served by KASC during early November. The Marketing people spent nearly two weeks with the NASA display, promoting the RDC services to Caravan visitors. Officials of the industries visited were also contacted when possible.

The literature distributed has resulted in 6 inquiries, and other interest was generated by the personal contacts made. To date, no sales have resulted, but we have identified several good prospects.

KASC CLIENTELE TOTALS

At the end of the reporting period, the KASC clientele consisted of 57 organizations being served on an annual basis. During the period covered by this report, however, a total of 70 clients received service. This total is broken down as follows:

New Clients	4
Renewed Clients	9
Special (One Time) Clients	6
In Process	40
Delinquent	4
Dropouts	7
TOTAL	70

KASC CLIENTELE COMPOSITION

The geographic distribution of these organizations is shown in Table 2-3 while the group composition based on size, type, and two-digit standard industrial classification is shown in Tables 2-4, 2-5, and 2-6.

Table 2-3. Clientele Composition--Geographic

STATE	NO. OF COMPANIES
Connecticut	1
Delaware	1
Illinois	6
Maryland	3
Michigan	3
New Jersey	5
New York	5
Ohio	5
Pennsylvania	40
West Virginia	1
TOTAL	70

Table 2-4. Clientele Composition--Size

SIZE	NO. OF COMPANIES
Large	46
Small*	24
TOTAL	70

*Under 500 employees

Table 2-5. Clientele Composition--Type

TYPE	NO. OF COMPANIES
Manufacturing	61
Non-Industrial	1
R & D	6
Services	2
TOTAL	70

Table 2-6. Clientele Composition--SIC Code (Two Digit)

CODE NO.	CATEGORY	NO. OF COMPANIES
14	Mining and Quarrying	1
26	Paper and Allied Products	1
27	Printing, Publishing	1
28	Chemical Products	5
32	Stone, Clay, Glass Products	4
33	Primary Metal Industries	13
34	Fabricated Metal Products	4
35	Machinery (Non-electric)	13
36	Machinery (Electric)	10
37	Transportation Equipment	2
38	Instruments (Photo, Optical)	5
39	Miscellaneous Manufacturing	2
73	Research (Commercial)	6
82	Educational Services	1
89	Miscellaneous Services	1
91	Federal Government	1
	TOTAL	70

EXHIBIT A

'Secretary Memo'

KASC MEMO

TO THE BOSS'S SECRETARY:

Screening the boss's mail is part of my job, too! That's why I inserted this little note--to call your attention to the importance of the attached letter.

It explains a service that could be very valuable to your company. Would you please route it to your boss's desk, or if it's "one of those days " around the office--please send it on to your Director of Research?

I would consider it a personal favor if you did--and I know it will make my boss happy, too!

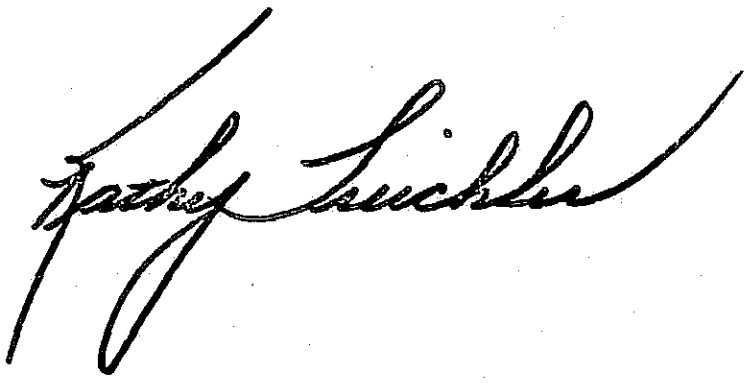


EXHIBIT B - Page 1

Initial Letter

THE KNOWLEDGE AVAILABILITY SYSTEMS CENTER
UNIVERSITY OF PITTSBURGH • PITTSBURGH, PENNSYLVANIA 15213 • PHONE 621-3500

Information is a resource parallel to land, labor, and capital. For people such as yourself who are concerned with return on investment, information is a common denominator. However, the mere existence of information is not enough--access to relevant information is the major factor which contributes to a successful return on investment.

Here at the University of Pittsburgh, access to information is one of our specialties. We apply this talent to the benefit of our many industrial clients by exploiting six computerized files (over one million entries) for information relevant to their scientific and technical interests.

These files are:

- The National Aeronautics and Space Administration File. (Over 400,000 items and growing at a rate of approximately 5,500 per month.)
- The Chemical Abstracts Service Condensates File. (About 240,000 entries a year from over 12,000 journals.)
- The Chemical Abstracts Service Chemical Titles File. (Over 750,000 items and growing at a rate of 10,000 per month.)
- The Engineering Index Plastics File. (Over 14,000 items and growing at a rate of 600 per month.)
- The Engineering Index Electronics File. (Over 16,000 items and growing at a rate of 1,000 per month.)
- The Department of Defense Documentation Center Files. (Over 80,000 items and growing at a rate of 1,200 per month.)

EXHIBIT B - Page 2

Supplementing these files, we offer a spectrum of scientific and technical competence (16 subject specialists--nine of whom are members of the senior staff and faculty of the School of Engineering). This talent is applied to a company's needs on the basis of the technical disciplines associated with its interest areas. The specialists meet with your representatives, phrase profiles, prepare computer search strategies for your interest areas, and even screen search output--depending on your needs and wishes.

I am confident we can be of service to you. Why not contact me now for more information on how our talents and resources can be applied effectively and economically in improving your return on investment.

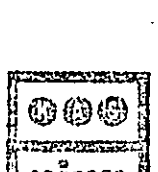
Sincerely,

Edmond Howie
Assistant Director

EH:cc

EXHIBIT C - Page 1

Follow-Up I



THE KNOWLEDGE AVAILABILITY SYSTEMS CENTER
UNIVERSITY OF PITTSBURGH • PITTSBURGH, PENNSYLVANIA 15213 • PHONE 621-3500

Your company can have fast, low cost access to some of the worlds largest technical data files. Access is available through the Knowledge Availability Systems Center of the University of Pittsburgh. Whether your organization is large or small, KASC is uniquely qualified to serve your technical needs.

- KASC has six computerized data files containing scientific and technological information collected worldwide; over one million entries with more than 38,000 additions per month.

- KASC is one of six Regional Information Dissemination Centers for the National Aeronautics and Space Administration. The technology that sent man to the moon is documented. Part of KASC's job is to assist organizations such as yours to find application for this information.

- KASC interacts with another University organization, the Pittsburgh Chemical Information Center, to provide an information program that will serve the chemical industry.

- KASC provides fast, confidential service. Our services are sold on a not for profit basis. Annual search results are provided at a cost of $50.00 and up.

THE KNOWLEDGE AVAILABILITY SYSTEMS CENTER

EXHIBIT C - Page 2

Follow-Up I

- KASC is supported by sixteen technical specialists, nine of whom are members of the senior staff and faculty of the School of Engineering. The expertise of this group is applied to the needs of our clients; to help define the clients area of interest and then to translate client questions to computer search format. In an informal way, they can guide a client in his direction of research effort or pass along information from the specialists personal knowledge.

Here at KASC we consider information to be a resource, in the sense that land, labor and capital are resources. That's why we've written you this second letter. We'd like to tell you how our information resources can benefit you. Please call or write.

Yours very truly,

Edmond Howie
Assistant Director

EH:cec

EXHIBIT D

Follow-UP II

THE KNOWLEDGE AVAILABILITY SYSTEMS CENTER
UNIVERSITY OF PITTSBURGH • PITTSBURGH, PENNSYLVANIA 15213 • PHONE 621-3500

Our service can benefit your company! That's why we have written to you on several occasions. We want to explain a technical information program that is helping companies such as yours to develop that all important "competitive edge."

What is your field of interest? If you need information on inventions, concepts, designs, discoveries, techniques, computer software or managerial methods; we have it. It's in our computerized files. We can search the files for information relevant to your field of interest.

We're a Regional Dissemination Center for NASA; we are a node in a national information network; we provide Chemical Information Services; we sell computer programs and much much more.

May we hear from you today?

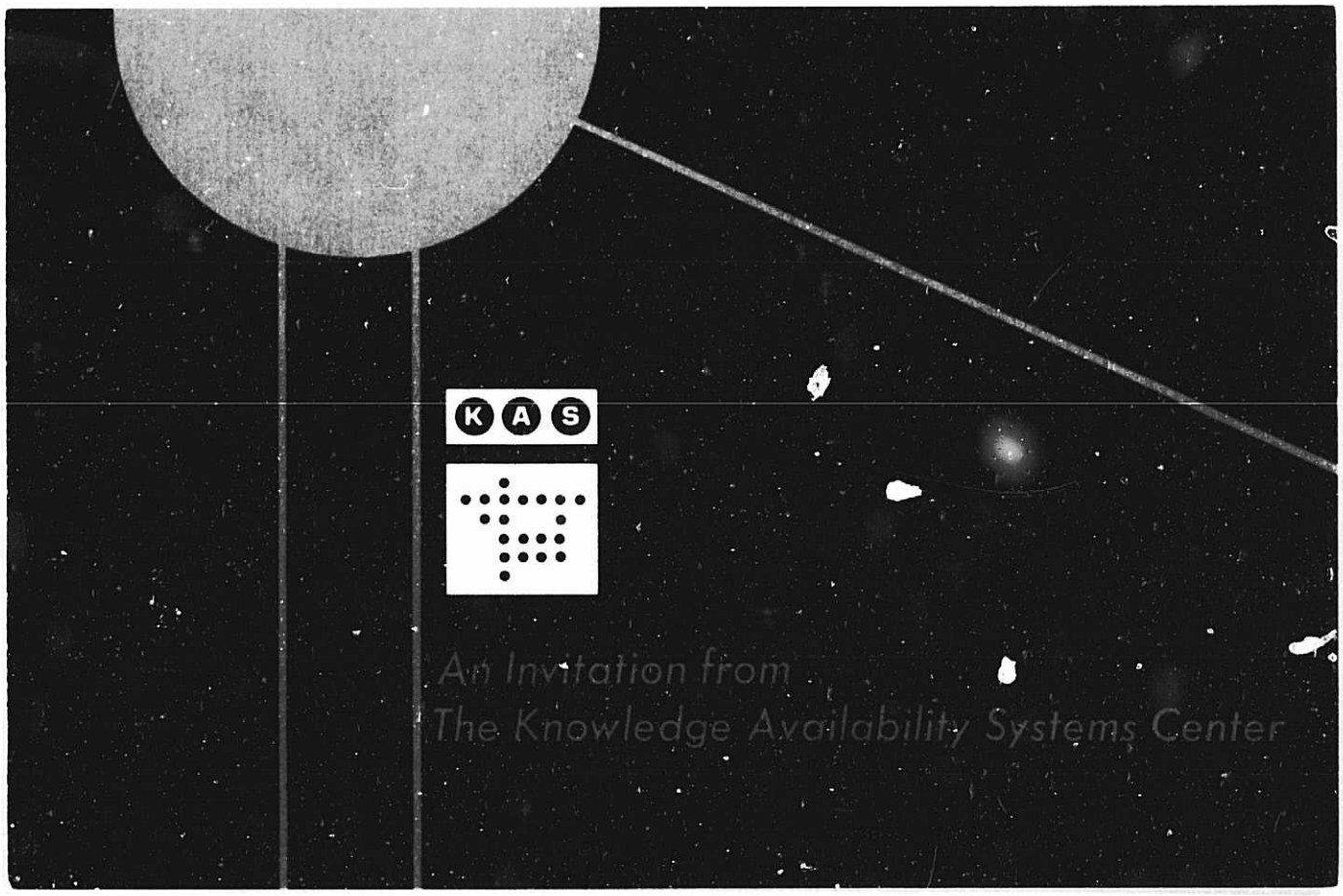
Yours very truly,

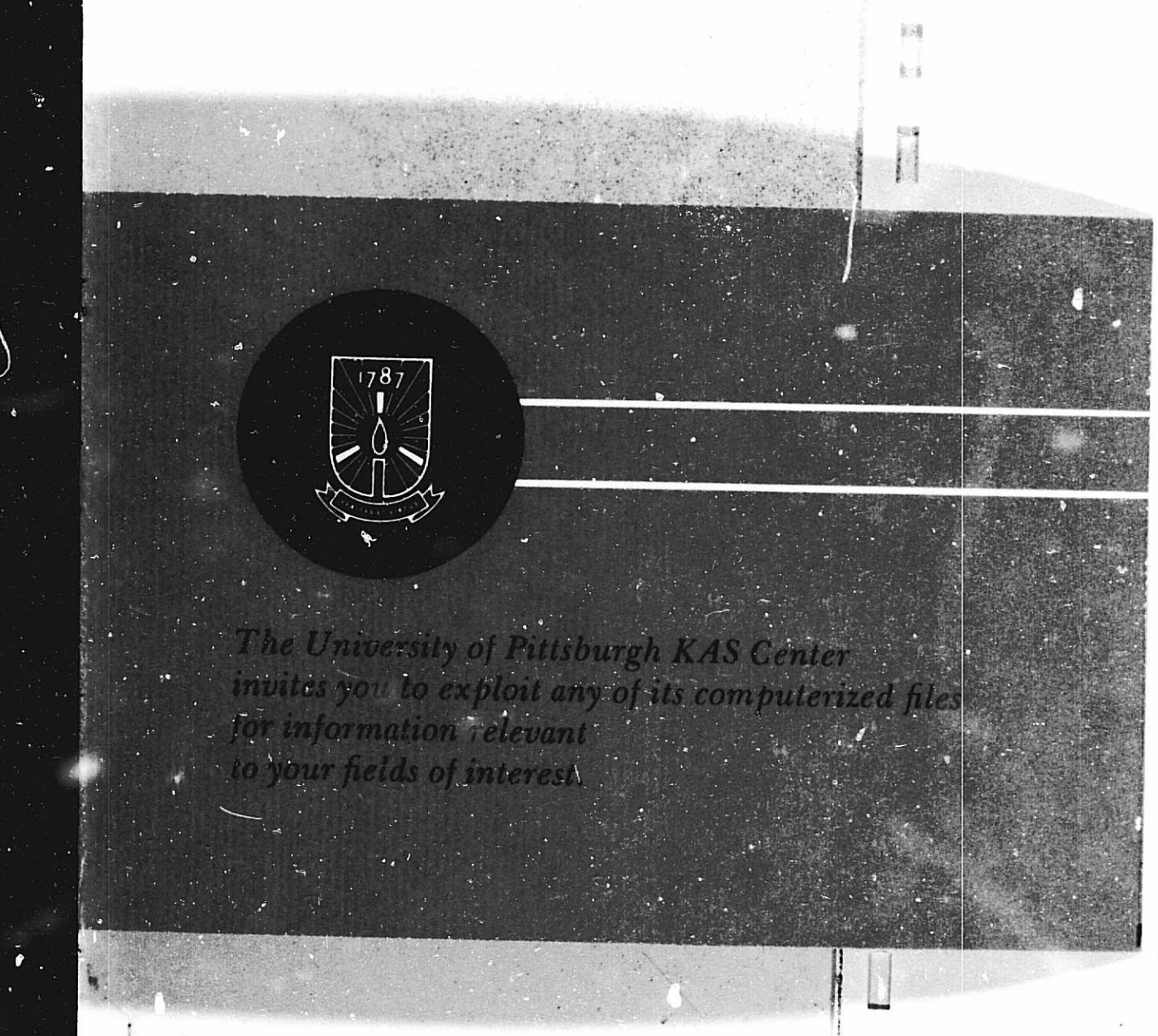
Edmond Howie
Assistant Director

EH:cec

EXHIBIT - E

Business Reply Piece





I am interested in the KASC Information Service(s) indicated:

- ☐ Chemical Condensates
- ☐ Chemical Titles
- ☐ NASA/Pitt/Industry Technology Utilization Program
- ☐ Engineering Index
- ☐ Defense Documentation Center

Please contact me to arrange for a:

- ☐ Personal presentation
- ☐ Group presentation
- ☐ Further discussion

Name_____

Organization_____

Street Address_____

City_____ State_____ Zip Code_____

III. TECHNICAL OPERATIONS

Guy W. McGee

- Description of Services

  Search Services
  Document Services
  Abstract Packet Services

- Search Services

  Profiles Served
  Searches Performed
  Searches Processed
  Citations Retrieved and Submitted
  No Citation Searches
  Clientele Evaluation
  Computer Runs
  Repackaging of Search Output
  Functional and Cost Analysis Effort

- Document Services

- Abstract Packet Services

DESCRIPTION OF SERVICES

Three general services are provided by the KAS Center to the non-aerospace section of the Nation's Industry:

- Search Services
- Document Services
- Abstract Packet Services

During the reporting period, the search services of the KAS Center were based on the NASA document collection which is announced in Scientific and Technical Aerospace Reports (STAR) and International Aerospace Abstracts (IAA). The service consists of the identification, either mechanically or manually, of documents containing information related to a client's problem and the reproduction for the client of abstracts of the identified documents. As a result of these search services, or through avenues of announcement apart from the KASC, clients receiving search services make use of the Center's document services to obtain the full document copy of an item which they desire. Document services are not provided except in association with search services.

The abstract packet services of the Center involve the joint efforts of the KASC and a nationally distributed technical periodical. Using the KASC search services, the periodical identifies "packets" of document abstracts related to a single topic which it knows to be of interest to its readers. These packets are described by the periodical in one or more of its issues and readers may request copies of the packets

through the reader services of the periodical's publisher. The request is forwarded to the KASC which responds directly to the client.

The search services offered by the KASC may be in response to the following:

- A custom profile of a client.
- A KASC designed profile in response to a group of clients, commonly known as a standard interest profile (SIP).

Searches for custom profiles may be performed on the basis of one of the following:

Current Awareness - A search of the monthly computer tape received, containing that month's acquisitions. Twelve monthly searches comprise a search of all accessions for a period of one year from the time of submission of the profile.

Retrospective - A search of all computer tapes previously received, including the most recently received monthly tape, comprising a search of all accessions made for the system up to the time of submission of the profile.

Current Awareness and Retrospective - A combination of the two previous search services, comprising a search of all accessions made for the system up to the time of submission of the profile and of all future accessions for a period of a year. Service may be initiated by a partial retrospective search (a select protion of the past accessions) or by an initial current awareness search before performing a complete retrospective and continuing on the future monthly basis.

Searches for standard interest profiles are performed only on a current awareness basis. For clarification, the SIP of the KASC search services

is distinguished from the search results of profiles of general interest distributed as abstract packet services in the following way: Inasmuch as searches are performed on a current awareness basis for standard interest profiles, a total of 12 monthly searches are available to clients who subscribe to such a profile. On the other hand, an individual who purchases the search results for a profile of general interest through the periodical announcing its availability receives the results of a single search which has covered a select portion of the most recent documents accessioned by NASA, i.e. a partial retrospective search.

Additional flexibility is available to the client who desires search services for a custom profile. Not only may he receive current awareness, retrospective, or the combination of current awareness and retrospective searches, the output which he receives may vary in one of three ways. The three variations have been designated as service types and are as follows:

Type I. Subscribers to this service receive only a computer printout which lists the accession numbers of documents cited by the search. No abstracts or bibliographic entries for the documents are provided and no review of the search results is performed by subject specialists. Subscribers must provide their own copies of STAR and IAA for identification of the documents whose accession numbers appear on the printout.

Type II. Subscribers to this service receive abstracts with complete bibliographic entries of all documents cited by the computer search. No review of the search results is performed by subject specialists.

Type III. Subscribers to this service receive abstracts with complete bibliographic entries of those documents cited by the computer search which are relevant to the

profile as determined by a specialist in the subject area of the profile.

These three service variations for each of the three search types, combined with the SIP, present ten options in search service. Each of these options is priced separately.

In addition, the KASC offers a client full document copy service. This service is based on the exploitation of local sources as well as those of a nationally known abstract service, International Aerospace Abstracts published by the American Institute of Aeronautics and Astronautics.

Profiles Served

During the reporting period, a total of 361 unique profiles were served on either a current awareness basis (C/A), a retrospective basis (Retro), or a combination of both (Retro + C/A). Of the total, 32 were newly introduced to the system during the three month period of work performance. This was 9 less than were introduced during the preceeding quarter. Cancellation of service on profiles continuing from the earlier quarter again exceeded the initiation rate of the new profiles resulting in a net decrease of 65 profiles. The totals by search types are as follows:

	Continuing from Previous Quarter	New during Current Quarter	Totals
Current Awareness	308	12	320
Retrospective	0	10	10
Combination	21	10	31
Totals	329	32	361

By service types, the distribution of the profiles served is presented in Table 3-1.

Table 3-1. Profiles Served by Service and Search Types

SEARCH TYPE	SERVICE TYPE								TOTALS
	Type I		Type II		Type III		Type IV		
	Continuing	New	Continuing	New	Continuing	New	Continuing	New	
C/A	0	0	85	8	208	3	15	1	320
Retro	0	0	0	6	0	4	0*	0*	10
Retro + C/A	0	0	7	3	14	7	0*	0*	31
TOTALS	0	0	92	17	122	14	15	1	361

*Not Applicable

Of the 6 new Type II, Retro only, profiles, one was received from an organization falling within the classification of small businesses. This organization Berk-Tek, Inc., of Reading, Pennsylvania was referred to the KAS Center by the Small Business Administration under agreement with the National Aeronautics and Space Administration which provided that such organizations would receive a Type II Retrospective

only search at no expense. Should the organization so desire, current awareness service would be continued for the profile at a cost to the organization of the difference between the rate for Retro + C/A service and Retro only service. As of the end of the current reporting period, C/A service had not been requested for the profile.

During the quarter an additional SIP (Type IV service) of the 31 offered by the KASC was requested by the Center's clientele. Currently 15 of the 31 are now searched for a total of 17 subscriptions.

Searches Performed

A total of 1,014 searches were performed for the 361 unique profiles identified above. The quantities of searches by service types is presented in Table 3-2.

Table 3-2. Searches Performed by Service Types

	SERVICE TYPE				
	Type I	Type II	Type III	Type IV	TOTALS
C/A	0	284	660	46	990
Retro	0	27	35	0*	62
TOTALS	0	311	695	46	1,052

*Not Applicable

A comparison of Table 3-1 with Table 3-2 shows that for each search type the number of searches performed exceeds the number of unique

profiles served. This is explained as follows: a profile receiving current awareness service receives a search each month and, therefore, for any one profile receiving C/A service during all three months of the reporting period a total of three searches will have been performed.

Apparently not all the profiles served on a C/A basis during this quarter received three searches. Service for a profile may have been terminated before the third search was performed or service for a newly introduced profile may not have begun until after the first search was performed. The rate of termination and introduction of profiles for C/A service during the current reporting period resulted in the total C/A searches being less than three times the number of unique profiles receiving C/A service.

A similar phenomenon occurs with Retro searches. During any one quarter a profile requiring retrospective service may receive one search of the retrospective file or one or more searches of select portions of the retrospective file. Regardless of the range of the search, on the tabulation it has been counted as one search, and therefore, the total Retro searches exceeds the total unique profiles receiving retrospective service. Obviously, these two phenomenon present a combined effect for the searches of profiles receiving retrospective plus C/A service.

The 1,052 searches performed during the current quarter were 134 fewer than the 1,186 searches which had been performed during the preceeding quarter. This decrease in searches is accounted for by the net decrease of 65 profiles mentioned earlier.

Searches Processed

With a decrease from the preceeding quarter to the present reporting period of profiles served and searches performed, it is to be expected that the number of searches processed will also have decreased. For the current quarter, 1,147 searches were processed as opposed to 1,155 for the earlier quarter. The 1,147 processed during the three months of this report are broken down by service category in Table 3-3.

Table 3-3. Searches Processed by Service Type

	SERVICE TYPE				
	Type I	Type II	Type III	Type IV	Totals
C/A	0	348	666	52	1,066
Retro	0	43	38	0	81
TOTALS	0	391	704	52	1,147

Following the performance of a search, varying processing steps are required before the results of the search are mailed to the recipient. Thus, a search performed in one period of work may not be completely processed until the following reporting period. For this reason, the numbers of searches processed and mailed as depicted in Table 3-3 does not agree with the numbers of searches performed which are presented in Table 3-2.

The statistics which are presented in the next section of this report pertain only to searches for which processing was completed during the reporting period.

Citations Retrieved and Submitted

The 1,147 searches processed during the reporting period resulted in the identification of 45,556 citations: 45,239 (99.3%) were identified by computer and 317 (0.7%) were identified manually. Of the total retrieved, 22,136 (48.6%) were submitted to clients.

The 45,556 identified items were 17,358 (27.5%) fewer than were identified in the preceeding quarter. The decrease occurred entirely within the computer cited items. Manually cited items actually increased by 47 (17.4%) which raises the actual decrease of computer cited items to 17,405.

Items submitted to clients also decreased 7,142. However, as a result of the smaller decrease in items submitted than in items identified, the percentage of relevant items, i.e. items submitted divided by items identified, for the current reported period (48.6%) increased over the relevancy percentage for the preceeding quarter (46.5%).

Table 3-4 presents for all processed searches a tabulation by source of citations retrieved compared to citations submitted.

Table 3-4. Citations Retrieved vs. Citations Submitted

	Citations Retrieved	% of Total Retrieved	Citations Submitted	% Source Cited	% Total Submitted
STAR	24,578	54.0	11,321	46.1	51.1
IAA	20,279	44.5	10,371	51.1	46.9
AM	596	1.3	375	62.9	1.7
TECH BRIEFS and MISC.	103	.2	69	67.0	.3
TOTALS	45,556	100.0	22,136	48.5	100.0

Those citations which were retrieved and submitted for current awareness searches are presented by source and mode of citation in Tables 3-5 and 3-6.

Table 3-5. Current Awareness Citations Retrieved

TYPE OF SEARCH	ABSTRACT OR ITEM SOURCE					TOTAL
	IAA	AM	STAR	Tech Briefs	Other	
Mechanical	14,155	196	15,518	0	0	29,869
Manual	115	19	104	43	20	301
TOTALS	14,270	215	15,622	43	20	30,170

Table 3-6. Current Awareness Citations Submitted

TYPE OF SEARCH	ABSTRACT OR ITEM SOURCE					TOTAL
	IAA	AM	STAR	Tech Briefs	Other	
Mechanical	6,580	33	5,962	0	0	12,575
Manual	82	0	105	40	12	239
TOTALS	6,662	33	6,067	40	12	12,814

The same type of information for retrospective searches is presented in Tables 3-7 and 3-8.

Table 3-7. Retrospective Citations Retrieved

TYPE OF SEARCH	ABSTRACT OR ITEM SOURCE					TOTAL
	IAA	AM	STAR	Tech Briefs	Other	
Mechanical	6,006	381	8,956	27	0	15,370
Manual	3	0	0	13	0	16
Totals	6,009	381	8,956	40	0	15,386

Table 3-8. Retrospective Citations Submitted

TYPE OF SEARCH	ABSTRACT OR ITEM SOURCE					TOTAL
	IAA	AM	STAR	Tech Briefs	Other	
Mechanical	3,709	342	5,254	17	0	9,322
Manual	0	0	0	0	0	0
TOTALS	3,709	342	5,254	17	0	9,322

A summary of all citations retrieved and forwarded for both current awareness and retrospective searches is presented in Tables 3-9 and 3-10 by service type and source of citation.

Table 3-9. Total Citations Retrieved Per Service Type

SOURCE	SERVICE TYPE				TOTALS
	Type I	Type II	Type III	Type IV	
STAR	0	5,419	17,522	1,637	24,578
IAA	0	4,894	13,896	1,489	20,279
AM	0	346	196	54	596
Tech Briefs and Misc.	0	20	77	6	103
TOTALS	0	10,679	31,691	3,186	45,556

Table 3-10. Total Citations Submitted Per Service Type

SOURCE	SERVICE TYPE				TOTALS
	Type I	Type II	Type III	Type IV	
STAR	0	5,419	5,094	808	11,321
IAA	0	4,894	4,708	769	10,371
AM	0	346	20	9	375
Tech Briefs and Misc.	0	15	49	5	69
TOTALS	0	10,674	9,871	1,591	22,136

No Citations Searches

The per cent of "no citations" reports submitted during this quarter was 10.6, approximately the same as the preceeding quarter.

A notice of "no citations" is forwarded to clients for a portion of the searches performed each month despite supplementation by manual searches of mechanical searches failing to identify a single relevant citation. The manual searches are limited to the literature covered by the mechanical search. Supplementary manual searches are performed only for Profiles receiving Type III service.

A comparison of the "no citations" searches by service type is made in Table 3-11 for the three quarters of the annual period of service.

Table 3-11. No Citation Searches by Service Type

	1st Quarter			2nd Quarter			3rd Quarter		
	SEARCHES PROCESSED	"NO CITES"	%	SEARCHES PROCESSED	"NO CITES"	%	SEARCHES PROCESSED	"NO CITES"	%
Type I	0	0		0	0		0	0	
Type II	519	17	3.3	323	13	4.0	391	15	3.8
Type III	758	136	17.9	784	102	13.0	704	107	15.1
Type IV	43	0		48	0		52	0	
TOTALS	1,321	153	11.5	1,155	115	10.0	1,147	122	10.6

Table 3-12. Citations Evaluated

	1st Quarter		2nd Quarter		3rd Quarter	
	No. of Citations	%	No. of Citations	%	No. of Citations	%
Relevant	9,090	64.1	8,694	71.1	8,220	71.0
Relevant to Other Interests	1,160	8.2	709	5.9	979	8.5
Not Relevant	3,927	27.7	2,715	22.4	2,379	20.5
TOTALS	14,177	100.0	12,118	100.0	11,578	100.0

Clientele Evaluation

Evaluations of citations received during the current quarter indicated that citation relevancy to clientele interests remained as high (71%) as in the preceeding quarter. In addition, the percentage of citations not relevant to clientele interests decreased by nearly 2% from the preceeding quarter.

During the reporting period, clients returned evaluations of 11,578 citations associated with 646 searches (627 current awareness; 19 retrospective). A comparison between the current and preceeding quarters for the evaluated citations is permitted by Table 3-12, page 3-15.

The citations evaluated during the current quarter are broken down by source in Table 3-13.

Table 3-13. Clientele Evaluations

Source	Citations Evaluated	%
STAR	5,546	47.9
IAA	5,936	51.3
AM	67	.6
Tech Briefs and Misc.	29	.2
TOTALS	11,578	100.0

Tables 3-14 and 3-15 present customer evaluations per current awareness and retrospective searches respectively. Table 3-16 presents the evaluations per type of service provided.

Table 3-14. Customer Evaluation--Current Awareness Searches

Item Source	Related	%	Not Related	%	Related to Other Interests	%
IAA	3,399	48.7	1,332	58.7	250	48.2
AM	39	.5	23	1.0	2	.4
STAR	3,539	50.7	912	40.2	265	51.0
Tech Briefs	4	.1	2	.1	1	.2
Other	0	.0	0	.0	1	.2
TOTALS	6,981	100.0	2,269	100.0	519	100.0

Table 3-15. Customer Evaluation--Retrospective Searches

Item Source	Related	%	Not Related	%	Related to Other Interests	%
IAA	682	55.0	50	45.5	223	48.5
AM	2	.2	1	.9	0	.0
STAR	541	43.7	55	50.0	234	50.9
Tech Briefs	14	1.1	4	3.6	3	.6
Other	0	.0	0	.0	0	.0
TOTALS	1,239	100.0	110	100.0	460	100.0

Table 3-16. Client Evaluation vs. Service Type

Type of Service	Relevant Citations	%	Non-Relevant Citations	%	Related to Other Interests	%	Totals
Type I	0		0		0		0
Type II	3,673	44.7	1,487	62.5	199	20.3	5,359
Type III	4,421	53.8	772	32.5	758	77.4	5,951
Type IV	126	1.5	120	5.0	22	2.3	268
TOTALS	8,220	100.0	2,379	100.0	979	100.0	11,578

Computer Runs

In its current mode of operation, the KASC regional dissemination center requires a minimum of 21 reels of computer tape. These reels are assigned for use in the following ways:

- Seven reels are required for the file of tiems accessioned by NASA beginning in 1962 and running through the eleventh month of 1969. It is this file of tapes which is used for retrospective searches.
- An additional seven reels are required for duplicates of the above tapes for safeguarding the integrity of the retrospective file.
- One reel is required for the latest current monthly items accessioned by NASA to be used in C/A searches.
- One reel is required for storing the latest strategy used for each profile searched on a C/A basis as a safeguard for the punched card strategy data deck.
- Five reels are required for rotation between the KASC and NASA's Scientific and Technical Information Facility in the monthly updating process. A minimum of three reels are maintained on deposit at the Facility while two are interchanged between the two organizations each month.

During the current quarter the KAS Center relied upon the Computer Center of the University of Pittsburgh to perform a total of 52 runs required in the minimal operation of the RDC.

- 22 runs consisted of searches of part of the retrospective file of seven reels. A complete retrospective search is never performed in one run by the KASC. The 22 runs during this quarter represent a decrease of 11 retrospective searches from the 33 runs of the preceeding quarter.

- 3 runs consisted of the reformatting of the data on the monthly tape received from NASA onto another computer tape to meet the requirements of the KASC search program.

- 3 runs consisted of searches of the latest reformatted current monthly tape, i.e. C/A searches.

- 3 runs consisted of the execution of a program, using a separate data deck of cards but run concurrently with the C/A search, which generates various summary data pertaining to the profiles receiving the C/A search and which also generates an audit record for the processing of the C/A search.

- 5 runs consisted of the storage of the profile strategies used in C/A and retrospective searches on a separate reel.

- 6 runs consisted of the appending of the reformatted monthly data to that which has already been stored on the seven reels constituting the retrospective file.

- 8 runs consisted of the verification of descriptive statistical data collected in the provision of service to clients, such as items retrieved and forwarded. There was an increase of two such runs during this quarter over those of the preceeding quarter.

- 2 runs consisted of the summarization of descriptive statistical data for the purpose of perparing management reports.

Repackaging of Search Output

Plans which had been formulated in the previous reporting period for the improvement of the search results package received by KASC clients were implemented during the current quarter.

The end product of a search performed by the KASC now consists of a booklet, approximately 8½ by 10 inches in size, bound with a cover of the same design with which this report is bound. In the title block of the cover appears the following:

- An identification number assigned to the profile for which the search was performed.
- The title of the profile.
- The name of the individual for whom the search was performed.
- The individual's organizational affiliation.
- An identification number assigned to the organization.

The preliminary pages of the booklet consist of a title page (name of the individual, his organization, and profile title) and an introductory page providing the following:

- Identification of the NASA computer tape which was searched.
- Identification of the STAR and IAA issues announcing the documents covered by the computer tape.
- An explanation of the KASC Service Type which was provided for the search.
- The name of the KASC subject specialist (for Type III Service) responsible for the identification of abstracts of documents, produced as a result of the search, which are of direct interest to the individual submitting the profile.

The main part of the booklet consists of the abstracts of documents cited by the search. The abstracts are reproduced three to a page and appear in sequence of their accession numbers. In the case of Type III service, however, the sequence is interrupted by moving to the front all pages containing one or more abstracts identified and appropriately marked by a KASC subject specialist as being of direct interest to the

client. When a Type III Search results in no abstracts of direct interest as determined by the subject specialist, a third preliminary page is added to the booklet explaining the absence of marked abstracts.

Clients of the KASC search services have favorably received the new format of the search results package. Its appearance and the ease with which it can be stored and handled have been its most often remarded merits.

One merit which has not been vocalized but to which five clients have responded has been the inclusion for Type III service of abstracts of all documents cited by the search. Previously, for this service type, only those abstracts which the responsible subject specialist considered to be of direct interest were forwarded to the client. It was stated in the preceeding reporting period that the presence of the additional abstracts was expected to engender evaluative feedback when the KASC concept of the profile had been to restrictive. During the current quarter, in response to the new search results package, five clients receiving Type III service evaluated ten searches for nine profiles indicating that 15 items not considered by the KASC subject specialist to be of direct interest to the profile were indeed of direct interest. The KASC was thereby immediately alerted to potentially dissatisfied users of its search services and corrective action was initiated.

The ten searches resulting in client-identified abstracts of direct interest represent only 1.4% of the 704 Type III searches processed during the current quarter. As a measure of the effectiveness of KASC

subject specialists in weeding search output for the benefit of its clientele this small quantity indicates a high degree of success. It must be pointed out, however, that the time interval for evaluation of the 704 searches has been short.

A more economical method for production of the evaluation form accompanying each search result package was developed during this quarter. By altering the format of the computer printout received with each search and by supplying pre-printed two-part forms to the University of Pittsburgh Computer Center, the computer will be utilized to generate the evaluation form to be forwarded to the client. The second copy of the form becomes the work and file copy essential for processing of the search through the abstract reproduction and review functions. The pre-printed form utilizes standard 14 x 11 inch paper perforated to enable the KASC to strip the evaluation form to a standard 8½ by 11 inch page before mailing it to a client. The remaining portion of the 14 inch page contains a pre-printed form used for administrative routing of the file copy of the evaluation form and the recording of descriptive statistical data collected during the processing functions. The two-part form is to be printed on NCR paper eliminating the need for carbon paper and the extra clerical tasks which the carbon paper would entail the bursting process. The form will be available in February 1970 at which time the re-formated printout of search results will be affected.

Functional and Cost Analysis Effort

Work continued during the quarter on computer utilization for minimizing the clerical effort of generating statistical data for analysis and reporting purposes. An experimental program was tested which is expected to reduce the total cost of summarizing and analyzing data pertaining to items cited by searches and items forwarded to KASC clients.

In addition to the above programming effort, development was begun on a similar program to minimize clerical tasks in providing statistical descriptive data for the documents supplied to KASC clients. During the quarter a program routine was successfully developed for the generation of data essential in quarterly preparation of document invoices. Additional routines for generation of management report data pertaining to documents are still under development.

The functional and cost analysis effort for the search services of the KASC progressed during the reporting period through the accomplishment of the following:

- Completion of surveys to identify activities of profile processing.
- Categorization of the above activities.
- Quantification of the time per profile spent in each activity category.
- Quantification per profile of fixed costs, e.g. computer costs, copying machine costs, etc.
- Construction of a computer program for analysis of the above data.

- Execution of the program for preliminary results pending the final determination of operational overhead per profile.

Concordant with these activities, programming support was provided as follows:

- Documentation of the general philosophy of the KASC program used in searching the NASA files.
- Altering the KASC searching program to provide a changed format of the printed output and to provide additional information with the output in both printed and punched card formats.

DOCUMENT SERVICES

The number of documents supplied to KASC clients continued to decrease during this quarter but at a less rapid rate than in the preceeding three quarters.

During the Fall of 1968 a new pricing schedule was introduced making document costs an item separate from search costs. For the first three quarters following the introduction of the pricing schedule, December 1968 through August 1969, there was an average quarterly decrease of 608 documents submitted to the Center's clients. During the current quarter the decrease in documents submitted was 416. The twelve-month trend has shown a greater decrease in hard copy documents than in documents on microfiche; however, during the preceeding and current reporting periods this trend has been reversed.

For the twelve-month period the decreasing documents requirements of the KASC clientele has consisted primarily of documents announced in

STAR rather than those announced in IAA. This phenomenon has led to the conclusion that the report literature is more generally available to KASC clients than the published literature. For the four quarters the change in documents supplied by source of document announcement is as follows:

	STAR	IAA
December 68 - February 69	-30.4%	-11.0%
March 69 - May 69	-23.6%	-43.2%
June 69 - August 69	-22.6%	+12.1%
September 69- November 69	-15.2%	-31.7%

During the current quarter requests were submitted to the AIAA for the loan of 129 journals, conference proceedings, etc. which accounted for 44% of the quarter's requests for documents announced in the IAA. Approximately 30% of the remaining requests have been located in local libraries leaving approximately 26% which must be purchased from their publishers or borrowed from the AIAA during the coming months.

Table 3-17 presents the distribution of the documents supplied during the current reporting period on the basis of STAR subject categories, and Table 3018 provides, on a monthly basis, statistics about the source and form of the documents submitted. Table 3-19 presents the documents submitted by service type.

Table 3-17. Document Service (STAR Category)

STAR CATEGORY NUMBER	STAR CATEGORY TITLE	STAR		IAA		TOTALS
		HC	MF	HC	MF	
01	Aerodynamics	0	0	2	4	6
02	Aircraft	12	0	6	0	18
03	Auxiliary Systems	16	2	28	0	46
04	Biosciences	8	0	2	1	11
05	Biotechnology	4	1	6	1	12
06	Chemistry	22	7	9	0	38
07	Communications	4	4	5	1	14
08	Computers	22	1	9	2	34
09	Electronic Equipment	20	2	23	1	46
10	Electronics	6	0	3	0	9
11	Facilities, Research & Support	3	0	5	0	8
12	Fluid Mechanics	9	13	11	5	38
13	Geophysics	2	0	4	3	9
14	Instrumentation & Photography	16	12	47	18	93
15	Machine Elements & Processes	95	7	127	11	240
16	Masers	14	4	16	0	34
17	Materials, Metallic	102	23	98	9	232
18	Materials, Non-metallic	50	12	56	4	122
19	Mathematics	21	5	2	0	28
20	Meteorology	0	0	1	0	1
21	Navigation	0	0	0	1	1
22	Nuclear Engineering	9	2	1	0	12
23	Physics, General	12	5	5	0	22
24	Physics, Atomic, Mol., Nuclear	9	0	0	0	9
25	Physics, Plasma	5	2	7	0	14
26	Physics, Solid-State	15	2	30	0	47
27	Propellants	4	0	5	1	10
28	Propulsion Systems	1	2	6	1	10
29	Space Radiation	1	0	1	0	2
30	Space Sciences	2	0	7	1	10
31	Space Vehicles	0	1	1	1	3
32	Structural Mechanics	30	7	31	4	72
33	Thermodynamics & Combustion	5	2	13	3	23
34	General	14	0	6	2	22
	TOTALS	533	116	573	74	1296

Table 3-18. Documents Submitted

MONTH	SOURCE				TOTALS
	STAR		IAA		
	HC	MF	HC	MF	
September	182	48	250	26	506
October	153	37	186	32	408
November	198	31	137	16	382
TOTALS	533	116	573	74	1296

Table 3-19. Documents Submitted by Service Type

SERVICE TYPE	SOURCE				TOTALS
	STAR		IAA		
	HC	MF	HC	MF	
Type I	0	0	0	0	0
Type II	115	45	263	27	450
Type III	301	65	260	43	669
Type IV	32	1	17	0	50
Unknown	85	5	33	4	127
TOTALS	533	116	573	74	1296

ATBSTRACT PACKET SERVICES

The Abstract packet services of the KASC are made available to the general public through Materials Engineering, a Chapman-Reinhold

publication. This monthly publication selects groups or packets of abstracts covering a topic of interest to its readers from the results of partial retrospective searches performed for the magazine by the KASC. A description of the packet appears from time to time in the pages of the periodical and readers may obtain the packet through the reader services of the magazine's publisher at a cost of $3.00. The request is forwarded to the KASC which then duplicates the packet and mails it directly to the requester. The KASC shares in the fee paid for the packet as reimbursement for the search which it performed and for duplication of the packet.

During the current quarter no searches were required by Materials Engineering for its announcements. Packets which were distributed during the time period are presented below by month.

September	256
October	337
November	298
TOTAL	891

IV. ANALYSIS

Elizabeth P. Hartner

- Scope of activities
- Strategy preparation
- Manual Searches
- Review of Search Output
- Impact
- Aids to Marketing

SCOPE OF ACTIVITIES

The following services are provided by the analysis staff to insure the technical quality of search results:

- The formation and revision of search strategies for all profiles, Type I, II, III, and IV.(1)
- Manual searches of STAR and IAA journals, supplementary journals, bibliographies, and subfiles.(2)
- Review of results of Type III and all Type IV searches.
- Studies of the impact of results upon industry.
- Sample searches, explanations of searching techniques, and estimates of probable search results for proposed profiles for Marketing.

STRATEGY PREPARATION

During the third quarter a total of seventy-seven new strategies were written and twenty-three previously used strategies revised. Because two index bases have been used by NASA to identify documents accessioned for its collection, a profile requiring a full retrospective search must have two separate strategies. In addition, if a profile requires both Retrospective and Current Awareness Service, a different strategy may be used for the CA search than was developed for the

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(1) Type I, listing of accession numbers, not reviewed. Type II, list of accession numbers, with abstracts, not reviewed. Type III, list of accession numbers, with abstracts, reviewed. Type IV, Standard Interest Profile, list of accession numbers, with abstracts, reviewed.

(2) The subfiles are portions of the whole file consisting of all citations related to a general subject.

latest portion of the retrospective file, even though the same indexing base is used. Therefore, the number of new strategies exceeds the number of new profiles. The numbers of strategies prepared and reviewed during each month of the third quarter are presented in Table 4-1.

Table 4-1. Search Strategies Prepared and Reviewed

Data Base	September		October		November		Totals
	New	Revised	New	Revised	New	Revised	
NASA - SAL	8		7		11		26
NASA - Thesaurus	9		9	7	12	13	50
DOD							0
Chem. Condensates	7		6	3	8		24
Chem. Titles							0
Totals	24	0	22	10	31	13	100

The strategies for the new profiles submitted during this quarter were distributed among search areas listed below:

	No. of Profiles
1. Electronics, magnetics, electrical engineering	5
2. Fluid flow, fluid mechanics, heat transfer	3
3. Composites	3
4. Inspection, NDT, metal props, and cesting	3
5. Management, psychology	3
6. Physical metallurgy-solid state physics	3
7. Coatings, corrosion, surface finishes	2
8. Sound, acoustics, radio	2
9. Ceramics, refractories, glass	1

10. Chemical processing, catalysis, chemical engineering	1
11. Control-computers	1
12. Inorganic chemistry	1
13. Metallurgy, non-ferrous	1
14. Mechanical engineering and design	1
TOTAL	30

The twenty-three revisions were performed as a result of requests from the clients, requests from subject specialists, or upon the examination of profiles for which no citations had been forwarded to the client, or for which the client reported a high number of non-pertinent citations. Of the profiles forwarded after review with no citations, some are so narrow that no citations occur repetitively month after month. For some of these, the client expects, or hopes, not to find material.

MANUAL SEARCHES

Sixty-eight manual searches were performed during this quarter. Forty-eight of these manual searches were made by examination of abstracts cited as pertinent to an interest generically higher than the narrow specific interest of the question. These abstract files, called subfiles, are prepared by searching the tape with a strategy written for the higher generic area, to offset the unavailability of exact index terms for the narrow interest. Twenty of the manual searches were of the current journals (IAA and STAR) for profiles for which no related citations were identified. The number of profile searches performed in these two ways are presented in Table 4-2.

Table 4-2. Manual Searches by Month

	September	October	November	Total
Subject Indexes Search	7	8	5	20
Subfiles Search	13	17	18	48
Total	20	25	23	68

REVIEW OF SEARCH OUTPUT

Fourteen subject specialists reviewed search results of Type III and Type IV profiles during the third quarter, 1969. Six of these are full or part-time members of the staff of the KAS Center, while eight are members of the faculty of the School of Engineering of the University of Pittsburgh.

During this quarter the results of seven hundred and twenty-three searches were reviewed. Six hundred and sixty were Current Awareness and Standard Interest Profile searches. Eighteen were Retrospective Custom Profile searches. Table 4-3 shows the distribution of this work between the reviewin roups on a monthly basis.

Table 4-3. Searches Reviewed by Month

	Current Awareness			Retrospective	Total
	Sept.	Oct.	Nov.	All Months	
Engineering Faculty	104	103	95	4	306
KASC Staff Analysts	135	136	132	14	417
Totals	239	239	227	18	723

IMPACT

During the third quarter, 1969:

- A new document evaluation questionnaire in the form of a returnable postcard was prepared.
- Procedures for using returned questionnaires as a basis of identifying technology transfer or impact parameters were studied and test results obtained.
- Statistics to evaluate the four factors of the impact formula were collected and will be discussed.

- Reproduced on page 4-7 is the final print of the document questionnaire card. Mailing will begin December 9th for every document, including microfiche, until approximately one thousand cards have been sent out. Documents obtained from sources other than KASC, are not covered by this method. The sample obtained, therefore, will be warped in the direction of government publications and away from easily obtained journals. The document number, the company code, and the question number will be printed in the appropriate positions on the card before mailing. Records of the results will be maintained. Procedures to identify transfer and/or impact will be initiated for cards which indicate valuable documents.

- Thirty-six N documents of value were identified from questionnaires returned in the fall of 1968 by industrial clients. Forty-three N documents were identified as valuable from questionnaires returned in the fall of 1968 by users of the Penntap. Attempts to identify transfer were begun for the valuable N documents disclosed by industrial clients. Six telephone contacts have been made so far.

May we reveal that this document was of interest to your company? Yes ☐ No ☐
If the answer is "no" answers will be used in a statistical summary, without subject identification.

Document No. _____
Company Code _____
Question No. _____

Please grade your answers from 0 to 9 with 9 the most value and 0 for least.

	0	1	2	3	4	5	6	7	8	9
1. To what extent do you consider this document of use to you?										
2. To what extent did the information AID IN RESEARCH? .										
3. To what extent did it REDUCE COSTS?										
4. To what extent did it INCREASE PRODUCTIVITY?										
5. To what extent did it IMPROVE PRODUCT QUALITY? . .										
6. To what extent did it INCREASE PROFITS?										

Your signature _____ Date _____

Some evidences for technology transfer were uncovered by the six contacts, but for the most part discussion of the "valuable" N documents lead to a discussion of background importance. The results of the six contacts are listed below:

1. Document N68-33242 -- The user reported that a correlation was derived in the document between the easily measured $\frac{W}{A}$ values for fracture toughness, and the specification values K Sub IC. This correlation enabled the engineer to make a rapid determination of approximate K Sub IC values from the quickly measured $\frac{W}{A}$ values.

   Document N68-21917 -- The same user reported that the information in the document about the fabrication behavior of stainless steels as a function of mechanical properties, enabled him to predict the fabrication behavior of new alloys by measuring their mechanical properties.

2. Documents N68-37823 and N68-38344 -- These documents were reported by the user as a source of background knowledge. There was no direct transfer but the documents were extremely useful. The following comments were made:

   "facilitated decisions about the feasibility of proposed methods"

   "experimental results which give reference points for similar experiments with changed parameters"

   "identification of knowledgeable scientists to contact about experimental details and variables"

   "file of methods and results for which use is anticipated"

3. Another user at the same company reported good information in regard to reducing electrical interference with industrial control devices. The interference was reduced by shielding, as derived from a bibliography of documents they received from us. They intend to prepare a guide handbook on the subject.

4. Another large industrial user emphasized the value to industry of NASA developed information about nondestructive testing. He believes that extended and improved nondestructive test methods, resulting from the space effort, has increased industrial quality assurance and made industrial products safer.

5. The original user of the document designated as "valuable" has left the company.

6. Documents N68-34563 and N68-34738 -- The client again acknowledged the value of the documents but could not be more specific regarding their use.

In connection with the proposed NBC television interview of industrial companies for technology transfer, three other possible technology transfers were disclosed.

7. The Kawecki-Berylco Industries, Incorporated discussed with us the development of a strong, light-weight alloy which was

achieved by a colloid chemical method of effecting oxide particle dispersion hardening. The method was described in document N67-25395 and others. The ultimate use of the alloy was in the gyroscopic elements of an inertial guidance system such as is used in the transoceanic navigation of jet planes.

8. Another company indicated that information relating to exotic space age metals was useful to the company in handling these metals, but would not be more specific.

9. Another of our clients wrote in connection with the proposed television interview that he believed that an aluminum oxide humidity sensing element now being developed by Panametrics, Incorporated made use of technical ability developed by the NASA program. He also commented on the development of Gamma Ray Element Detectors for the Determination of Elements in Mineral Specimens by the Jarrell-Ash Division of Fisher Scientific Company. Neither of these companies are clients of ours.

- The data accumulated this quarter for questionnaire returns are limited to two companies, United States Steel and Johnson and Johnson. The impact formula

$$I = Q + P + C + R, \text{ where}$$

I is a quantity representing impact

Q is a quantity derived from document questionnaire answers

P is a quantity derived from evaluation data returned from the client

C is a quantity derived from customer contact reports

and R is a factor based upon company contact renewal

is, therefore, evaluated for each company, and the whole system.

As stipulated in the 5th Annual Report, the maximum values for the factors are:

$$I = 100$$
$$Q = 60$$
$$P = 10$$
$$R = 20$$
$$C = 10$$

Q = Questionnaire

Thirteen document questionnaires were received during the quarter, one of which is reproduced on page 4-12.

The maximum possible rating per question is 9. If the maximum value of Q is 60, and this is equated with an average question rating of 9, then the conversion factor is $\frac{60}{9} = 6.6$ and

$$Q = 6.6 \times A \quad \text{where}$$

A = average rating.

For the quarter (available data),

$$Q = 6.6 \times 4.5$$
$$Q = 30 \text{ for the system}$$

TO: Document Requester

After using the information in the attached document, please fill out and return this questionnaire in the enclosed envelope. Your answers will assist us in improving our service to you and in preparing management reports.

1. May we reveal that this document was of interest to your company? If the answer is "No", we will use the answers to the following questions in a statistical summary relating document source, subject area, etc. to value criteria with no reference to the name of the company which evaluated it . . . . . YES ☐ NO ☑

Please grade your replies from 1 to 9 using the appropriate spaces, with 1 indicating none or the smallest extent and 9 the greatest extent.

2. After you examined the document to what extent did you consider it of use to you? If of no use, you need only answer question 15 and 16 . . . . . 1 2 3 4 5 6 7 8 9 ☐☐☐☐☐☐☐☐☐
3. To what extent did specific data such as temperature, properties, rates or test results make the document useful to you or did it link variables together in an applicable way? . . . . . ☐☐☐☐☐☐☐☐☐
4. How useful was the described mechanism, process, material or technique to you? . . . . . ☐☐☐☐☐☐☐☐☐
5. To what extent was testing or experimentation modified because of this information? . . . . . ☐☐☐☐☐☐☐☐☐
6. To what extent did the information assist in performing research? . . . . . ☐☐☐☐☐☐☐☐☐
7. Did the information usefully add to your knowledge? . . . . . ☐☐☐☐☐☐☐☐☐

Was the information beneficial to your company in relation to the following:

8. To what extent did it reduce costs? . . . . . ☐☐☐☐☐☐☐☐☐
9. To what extent did it increase productivity? . . . . . ☐☐☐☐☐☐☐☐☐
10. To what degree did it improve product quality? . . . . . ☐☐☐☐☐☐☐☐☐
11. To what extent did it increase profits? . . . . . ☐☐☐☐☐☐☐☐☐
12. Estimate yearly savings $_____
13. If none of the above apply, in what other way was the document of use? For example, "for reference file"_____, "for other research interests"_____, "for future use"_____ (Check if applicable) YES ☐ NO ☐
14. Is it probable that you would miss this information if not for the NASA source? . . . . . YES ☐ NO ☐
15. Does there seem to be more information in the NASA literature on this subject than in other available sources? . . . . . YES ☐ NO ☐
    If "No", what other source is better?_____
16. Have you any suggestions or comments in regard to the service or the questionnaire? If so, you may write them on the back of this sheet.

Your signature_____ Date_____

Return to KAS Center, LIS Building, 135 N. Bellefield Avenue, Pittsburgh, Pennsylvania 15213
Attention: Mrs. E. P. Hartner

$Q = 6.6 \times 7.0$
$Q = 46$ for USSteel

$Q = 6.6 \times 2.0$
$Q = 13$ for Johnson and Johnson

C = Contacts

Each time that an Engineering Consultant or KASC scientist contacts a customer a record of his judgment of "company interest" over a range of 1 for "unsatisfactory", to 5 for "excellent" is made. The evaluations are averaged for each company and for the system. The highest value for C is 10, (page 4-11).

The highest contact rating is 5, therefore C = 2 x average rating.

For the System, for the Quarter, Contact Results

Rating R	1	2	3	4	5	Total
Number N	5	3	21	11	39	79
R x N	5	6	63	44	195	313

$$C = \frac{2 \times \Sigma (R \times N)}{\Sigma N}$$

$$C = 2 \times \frac{313}{79}$$

$$C = 8$$

For United States Steel, for the Quarter, Contact Results

Rating R	1	2	3	4	5	Total
Number N	0	0	0	0	4	4
R x N	0	0	0	0	20	20

$$C = \frac{2 \times 20}{4}$$

$$C = 10$$

For Johnson and Johnson, for the Quarter, Contact Results

Rating R	1	2	3	4	5	Total
Number N	0	0	0	0	2	2
P x N	0	0	0	0	10	10

$$C = \frac{2 \times 10}{2}$$

$$C = 10$$

P = Pertinency

From returned evaluation sheets on which the client indicates which abstracts are pertinent to his interests, the relevancy percentage of evaluated abstracts are calculated. These figures are the basis for the factor P, pertinency. Where no evaluations are returned, no figures are available. Principally because for that reason there is no complete measure of pertinency, the overall pertinency maximum value has been limited to 10.

Table 4-4. Relevancy Percentage of Evaluated Abstracts

	September	October	November	3rd Quarter
Current Awareness	67	71	76	71
Retrospective	64	75	100	80
Average	66	73	88	76

The following formula:

$$P = \frac{10E}{S}\left(\frac{A}{B} - \frac{N}{S}\right)$$

where A = number of the abstracts submitted to the client which he evaluated as relevant to his interests

B = total number of abstracts evaluated

S = number of searches in the time period

E = number of searches evaluated

N = number of searches resulting in "no citations"

was abandoned, because the total P factor is so small that such refinements are meaningless. The formula

P = average pertinency x 10

was adopted.

For the system, from Table 4-4,

$$P = .76 \times 10$$

$$P = 7.6 = 8$$

Again, because of the small total value of P, the over-all system P is used for the company calculations.

R = Renewal

In the 5th Annual Report the value of R was 0 for cancelled, 20 if renewed. For this quarter, the renewal factor was expanded to include weighting for the number of times a company has renewed:

$$R = \frac{3\ 1/3\ \Sigma(T \times N)}{\Sigma N}$$

where T = 0 for cancelled
1 for new company
2 for renewed once
3 for renewed twice
4 for renewed three times
5 for renewed four times
6 for renewed five times

N = number of companies

Renewal Changes for Third Quarter

Status	No. of Companies
Cancelled	2
New Companies	3
Renewed for the 1st time	1
Renewed for the 2nd time	0
Renewed for the 3rd time	4
Renewed for the 4th time	1
Renewed for the 5th time	3
	14

For the system

$$R = \frac{3\ 1/3\ (0 + 3 + 2 + 0 + 16 + 5 + 18)}{14}$$

$$R = 10.5 = 11$$

For the two companies, United States Steel and Johnson and Johnson, no renewal action took place during the quarter. R is then taken to be the present status:

R = 3 1/3 x 6 = 20 for United States Steel

R = 3 1/2 x 4 = 13.3 for Johnson and Johnson

I = Impact

Calculated "impact" values are then:

For the System

$I = 30 + 8 + 8 + 11$

$I = 57$

For United States Steel

$I = 46 + 10 + 8 + 20$

$I = 84$

For Johnson and Johnson

$I = 13 + 10 + 8 + 13$

$I = 44$

Comparison of these results with those listed in the 5th Annual Report show:

For system, increase from 45 to 57

For U.S. Steel, increase from 77 to 84

For Johnson and Johnson, decrease from 85 to 44

The increase for the system cannot be considered significant since, for the quarter, it is based on questionnaire results from two large companies. The increase for United States Steel is a reflection of their obvious enthusiasm as expressed by contact reports, the decrease for Johnson and Johnson seems significant since they have cancelled four out of eight questions this quarter. The impact formula does, therefore, give an arithmetical value which may indicate qualitatively the impact of our service on the client.

AIDS TO MARKETING

The major efforts made to aid marketing during the third quarter were:

1. Three questions varying in orientation from theoretical to engineering application were set up on subjects of possible interest to Liberty Mirror. Manual searches of the published indexes of NASA, Chemical Abstracts*, Engineering Index and DDC files were made for the year 1968. The abstracts cited for all four bases were sent to Liberty Mirror by Marketing for evaluation.

A comparison was made of the citations to study overlap.

Question 1: Plastic Films on Glass, Ceramics, and Metals.

Number of Citations

NASA	DDC	CHEMICAL ABSTRACTS (x2)**	ENGINEERING INDEX
48	11	78	29

Overlap: 10 NASA also appeared as DDC

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* Index available for only the first half of 1968 for Chemical Abstracts.

** Because only one-half of 1968 was searched, actual results were multiplied by two for figure presented.

Question 2: Bonding of Plastic to Glass

Number of Citations

NASA	DDC	CHEMICAL ABSTRACTS (x2)**	ENGINEERING INDEX
26	3	64	9

Overlap: 7 NASA also appeared as DDC
2 NASA also appeared as Chemical Abstracts

Question 3: The Reflection, Transmission, and Absorption of Visible Light by Lenses, Filters, and Mirrors

Number of Citations

NASA	DDC	CHEMICAL ABSTRACTS (x2)**	ENGINEERING INDEX
26	5	14	11

Overlap: 2 NASA also appeared as DDC

More rigorous comparisons of data base overlap will be available in the future. At present only Chemical Condensates and NASA are being compared by mechanical searching. The results are not sufficient to draw conclusions at present.

2. A question of interest to the Master Builders Association about the Qualitative and Quantitative Identification of Sulfides in Foundation Soils and Related Remedial Measures was

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** Because only one-half of 1968 was searched, actual results were multiplied by two for figure presented.

brought to our attention. Some manual searches of the files available to us were made in connection with this and two discussion meetings with representatives of the Master Builders Association and their consultant engineers were attended by representatives of Analysis, including Dean Turkes, Professor Trout, Dr. Miller, and Mrs. Hartner. Key words and suggested statements were drawn up.

3. Advice about searching the NASA file was given for several potential customers including the Barnes Corporation, The Genuine Tool Company, and others.

4. A more extensive study of the interests of KPA Nuclear, Inc., a potential customer, was made by Dr. Geiger, Mrs. Majumdar, Mrs. El Hadidy, and Mrs. Hartner, and conclusions submitted to the marketing department.

5. Strategies for sample searches on the Chemical Condensates base were formulated by Mrs. Hartner and Mrs. El Hadidy. Four of these sample searches were entered for the Johnson and Johnson Company.